



Image Processing for
Scanner 1500 and
Scanner 2500

User's Guide

A-63055

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Introduction

Kodak's low volume production scanners include image processing technology that can improve image quality and sometimes make the reproduction better than the original.



Kodak Digital Science™ Scanner 1500



Kodak Digital Science™ Scanner 2500

You can use the ISIS driver or TWAIN Data Source (both are available on the CD that is included with the scanner) or *Kodak Digital Science* Low Volume Capture Software to enable image processing.

Many popular scanning applications are also compatible with these scanners. However, other scanning applications may not be able to access any or all of the image processing options.

Not all image processing features are available for each scanner or each driver. Refer to the table on the following page for the features available for each scanner.

NOTE: The scanned images used in this guide were selected for the challenges presented to a typical scanner due to the low-contrast characteristics of the images.

Feature	Scanner 1500		Scanner 2500	
	ISIS	TWAIN	ISIS	TWAIN
Area	√	√	√	√
Barcode	√		√	
Binary Mode / Automatic Threshold	√	√	√	√
Brightness	√	√	√	√
Compression	√		√	
Contrast	√	√	√	√
Detect Double Feed	√	√	√	√
Detect Page Size / Detect Paper Size	√	√	√	√
Detecting Patch Codes	√		√	
Dither / Halftone	√	√	√	√
Dots per inch / Resolution (DPI)	√	√	√	√
Fit to Page	√	√	√	√
Gamma	√	√	√	√
Halftone Mode / Automatic Separation	√	√	√	√
Image Emphasis	√	√	√	√
Imprinter (Document Printer)	√	√	√	√
Lamp (dropout lamp color)			√	√
Length Control	√		√	
Long Paper			√	
Manual Feed	√	√	√	√
Method		√		
Mirror Image	√	√	√	√
Mode / Image Type	√	√	√	√
Noise Reduction	√	√	√	√
Page		√		√
Page Size / Paper Size	√	√	√	√
Read Deskew Data	√		√	
Region / Side Settings	√	√	√	√
Remove Shadow	√	√	√	√
Reverse Image	√	√	√	√
Scanner Information / Scanner Status	√	√	√	√
Side		√		√
Slow Feeding	√	√	√	√
Stop at Skew		√		
Sub Area		√		√
White Level From Paper / White Level	√	√	√	√

Memory Requirements

The Scanner 1500 and the Scanner 2500 both have 8 MB of memory already installed. This may be sufficient for your scanning needs.

Additional memory may be required, depending on the selected resolution and paper size. You may add up to 64 MB more memory on SIMM modules for a total of 72 MB. (Memory is available in 8, 16, or 32 MB modules. Obtain memory at a local retailer.) Up to two SIMM modules can be installed for the required extended memory. Refer to the scanner's User's Guide for information about installing memory.

The tables below and on the following page show how much memory (in MB) you would need to add to scan a particular paper size at a given resolution. ("0" means that no additional memory is required.)

Simplex Scanning (8-bit)

Resolution	A3	A4	A5	A6	B4	B5	B6	Ledger	Legal	Letter
100 dpi	0	0	0	0	0	0	0	0	0	0
200 dpi	0	0	0	0	0	0	0	0	0	0
300 dpi	16	8	0	0	8	0	0	16	8	8
400 dpi	24	8	0	0	16	8	0	24	16	8
500 dpi	40	16	8	0	32	16	8	40	24	16
600 dpi	64	32	16	8	48	24	8	64	40	32

Simplex Scanning (4-bit)

Resolution	A3	A4	A5	A6	B4	B5	B6	Ledger	Legal	Letter
100 dpi	0	0	0	0	0	0	0	0	0	0
200 dpi	0	0	0	0	0	0	0	0	0	0
300 dpi	8	0	0	0	0	0	0	8	0	0
400 dpi	8	0	0	0	8	0	0	8	8	0
500 dpi	16	8	0	0	16	8	0	16	8	8
600 dpi	32	16	8	0	24	8	0	32	16	16

Simplex Scanning (Binary)

Resolution	A3	A4	A5	A6	B4	B5	B6	Ledger	Legal	Letter
100 dpi	0	0	0	0	0	0	0	0	0	0
200 dpi	0	0	0	0	0	0	0	0	0	0
300 dpi	0	0	0	0	0	0	0	0	0	0
400 dpi	0	0	0	0	0	0	0	0	0	0
500 dpi	0	0	0	0	0	0	0	0	0	0
600 dpi	8	0	0	0	0	0	0	8	0	0

**Duplex Scanning
(8-bit)**

Resolution	A3	A4	A5	A6	B4	B5	B6	Ledger	Legal	Letter
100 dpi	0	0	0	0	0	0	0	0	0	0
200 dpi	8	0	0	0	8	0	0	8	8	0
300 dpi	32	16	8	0	24	8	0	32	16	16
400 dpi	56	24	8	0	40	16	8	56	32	24
500 dpi	—	40	16	8	64	32	16	—	56	40
600 dpi	—	64	32	16	—	48	24	—	—	64

**Duplex Scanning
(4-bit)**

Resolution	A3	A4	A5	A6	B4	B5	B6	Ledger	Legal	Letter
100 dpi	0	0	0	0	0	0	0	0	0	0
200 dpi	0	0	0	0	0	0	0	0	0	0
300 dpi	16	8	0	0	8	0	0	16	8	8
400 dpi	24	8	0	0	16	8	0	24	16	8
500 dpi	40	16	8	0	32	16	8	40	24	16
600 dpi	64	32	16	8	48	24	8	64	40	32

**Duplex Scanning
(Binary)**

Resolution	A3	A4	A5	A6	B4	B5	B6	Ledger	Legal	Letter
100 dpi	0	0	0	0	0	0	0	0	0	0
200 dpi	0	0	0	0	0	0	0	0	0	0
300 dpi	0	0	0	0	0	0	0	0	0	0
400 dpi	0	0	0	0	0	0	0	0	0	0
500 dpi	8	0	0	0	0	0	0	8	0	0
600 dpi	16	8	0	0	8	0	0	16	8	8

ISIS Driver

Installation

The ISIS driver is included with the scanner. You can install the driver from the CD.

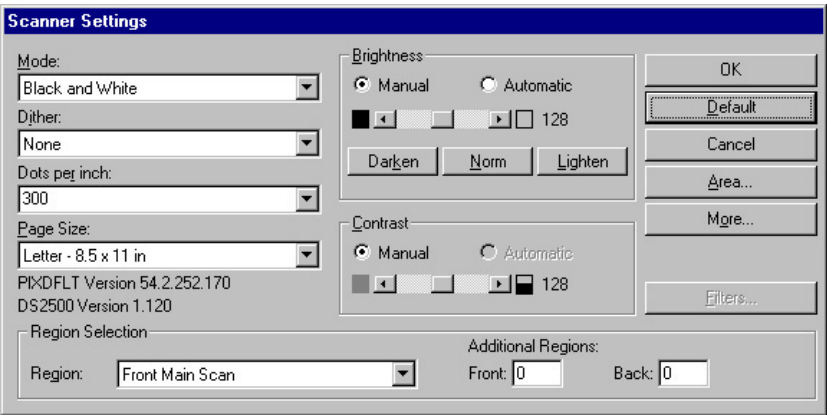
After installation of the driver is complete, install your application software on the host PC.

After your application software is loaded and launched, left-click on **File** and choose *Select Scanner*. The Scanner list allows you to select the scanner you want to use. The highlighted scanner is the scanner currently in use.

Scanner Settings Dialog Box

This section describes the features and buttons in the Scanner Settings dialog box.

The Scanner Settings dialog box shown below appears when either the Scanner 1500 or the Scanner 2500 is selected in the Scanner list.



Version information for the driver and scanner appear on the left side of the Scanner Settings dialog box.

Buttons in the Scanner Settings Dialog Box

Following are descriptions of the buttons in the Scanner Settings dialog box.

- | | |
|----------------|---|
| OK | Click on the OK button to accept all of the selections. |
| Default | Click on the Default button to return all settings to their predetermined factory settings. |
| Cancel | Click on the Cancel button to close the dialog box without saving any changes. |
| Area | Click on the Area button to access the Set Scanning Area dialog box. |
| More | Click on the More button to access the Kodak Scanner Special Features dialog box. Refer to the section entitled "Kodak Scanner Special Features Dialog Box." |

Mode

Choose a grayscale or binary (black and white) scanning format in the **Mode** drop-down list box. Select the format that is best suited to your application. Grayscale provides better image quality but requires more scanning time and memory.



Grayscale



Binary

NOTES: Additional memory may be required for grayscale scanning, depending on the selected resolution and paper size. Refer to the chapter entitled *Memory Requirements* for more information about memory.

If the base memory is not adequate, *Mode* automatically resets to the smallest format. No error message appears.

4-level gray = 2-bit gray

8-level gray = 3-bit gray

16-level gray = 4-bit gray

256-level gray = 8-bit gray

Dither

Dithering is a technique for reproducing halftone images, such as a photo, in binary mode.

Two pixel levels are used to represent the entire grayscale, thereby reducing the levels of gray required displaying an image. Using a dithering pattern requires less memory than using a grayscale mode.

Choose a dithering method in the **Dither** drop-down list box: None, Bayer Dither 64 (64 steps), Bayer Dither 16 (16 steps), 45 degree Halftone, 0 degree Halftone, Error Diffusion, and User Download.



Original



Bayer Dither 64



Bayer Dither 16



45 deg. Halftone



0 deg. Halftone



Error Diffusion

NOTE: You can specify a *.PXH file that uses a different dither pattern. To do this, choose "User Download" in the *Dither* drop-down list box. Click on the *More* button in the Scanner Settings dialog box to access the Scanner Special Features dialog box. Click on the *Dither* button in the Download From File group box in the Scanner Special Features dialog box and select a dither pattern file in the file selection box.

Dots per inch (Resolution)

Dots per inch (dpi) indicates the scanning resolution, which largely determines the quality of the scanned image. The greater the resolution, the better the reproduction. However, scanning at a higher resolution also increases scanning time and file size. This function sets the resolution of the main scan and sub-scan areas. The industry standard is 200 dpi (about 8 pixels/mm).

You can choose a preset resolution value in the *Dots per inch* drop-down list box or type the desired value. The default value is 300 dpi. Following are the available resolutions:

- Scanner 1500—100-600 dpi (1 dpi/step)
- Scanner 2500—100-600 dpi (1 dpi/step)

NOTE: Changing the resolution affects the *Area*, *Region*, *Dither*, and *Barcode* settings. Specify the resolution before you select these functions.

Page Size

This option determines the scanning area by a pre-determined paper size. The default page size is set when a scanner is first selected. Choose a paper size in the **Page Size** drop-down list box.

NOTE: Changing the page size affects the *Area*, *Region*, *Dither*, and *Barcode* settings. Specify the page size before you select these functions.

Brightness

This function allows you to adjust the image brightness, making it lighter or darker. There are two **Brightness** modes, *Automatic* and *Manual*, and three preset modes, *Darken*, *Norm*, and *Lighten*.

Select the *Manual* radio button in the Brightness group box. You can adjust the brightness setting by dragging the Brightness sliding control bar. Select a value from 1-255. The default is 128. The smaller the number, the darker the image. You also can click on the *Darken*, *Norm*, and *Lighten* buttons to adjust the brightness setting. Scan the document and check the brightness.

- Manual—allows you to increase or decrease the brightness setting.
- Automatic—sets brightness according to the scanning resolution.

NOTE: Refer to the section entitled “Binary Mode Automatic Threshold” for information about setting automatic brightness by Binary mode.

- Darken—sets a low brightness value (51), which is better for scanning light originals.
- Norm—sets an average brightness value (128).
- Lighten—sets a high brightness value (205), which is better for scanning dark originals.



Brightness 51



Brightness 128



Brightness 205

A darker setting is recommended for blurred character documents. With a brighter setting, background noise in a color document disappears.

Contrast

The **Contrast** option sets the image contrast by adjusting the difference between black and white, thereby making an image sharper or softer.

In a low-contrast setting, the difference between black and white is small, so the image is softer. In a high-contrast setting, the difference between black and white is large, so the image is clearer. Select a contrast value from 1-255. The default is 128.



Contrast 51



Contrast 128



Contrast 205

Select the *Manual* radio button in the Contrast group box. You can adjust the contrast setting by dragging the Contrast sliding control bar. Scan the document and check the contrast.

NOTE: The *Automatic* option is not available.

Region Selection

You can specify single-sided (simplex) or double-sided (duplex) scanning in the **Region Selection** group box.

NOTE: Both sides of the document are scanned at a same time in duplex scanning. The front side of the image/page is output first, then the back side of the image/page.

- Front Main Scan—sets scanning settings for the front side.
- Back Main Scan—sets scanning settings for the back side.
- Front Region #1, Front Region #2, and Front Region #3—sets the scanning settings for front regions #1-3.
- Back Region #1, Back Region #2, and Back Region #3—sets the scanning settings for back regions #1-3.

Choose a window in the *Region* drop-down list box in the Region Selection group box. Specify the *Mode*, *Dither*, and *Area* settings.

NOTE: The More dialog box is available only when “Front Main Scan” is selected in the *Region* drop-down list box.

You can define a brightness level and dither setting for a specific area of an image that is different from the brightness level and dither setting of the whole image.

This way, a picture can be dithered while the rest of the page remains undithered, or a faint stamp can be enhanced by setting a lower brightness than the rest of the page. You can define three regions per side. Each region can have its own brightness level, but all regions must use the same dither setting.

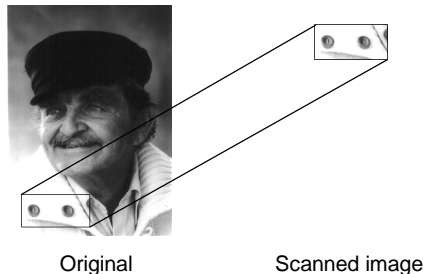
Each scanning side is settable for up to three regions. This function is available only for binary mode.

Area

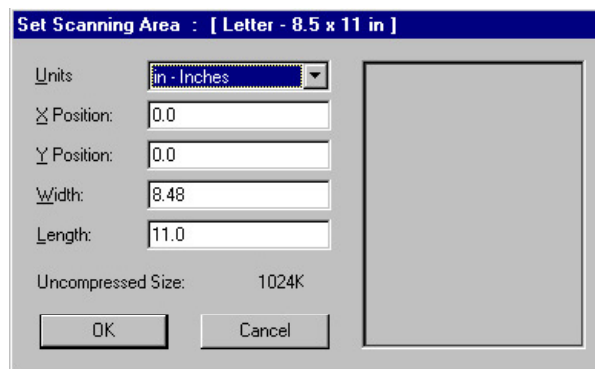
Choose a region in the Region Selection group box. Choose a dither pattern for the region in the *Dither* drop-down list box. Click on the *Area* button to access the Set Scanning Area dialog box and specify the position of the region. Select the next region in the Region Selection group box, if necessary. Input the number of the windows, in either the *Front* text box or the *Back* text box in the *Additional Region* section in the Region Selection group box.

Specifying an Area

To capture a portion of an image, click on the *Area* button to access the Set Scanning Area dialog box. Area settings are determined by the X and Y positions and the width and length coordinates.



Set the scanning area in the Set Scanning Area dialog box on the basis of the size specified in the *Page Size* drop-down list box. You can also use the mouse to define the scanning area in the window.

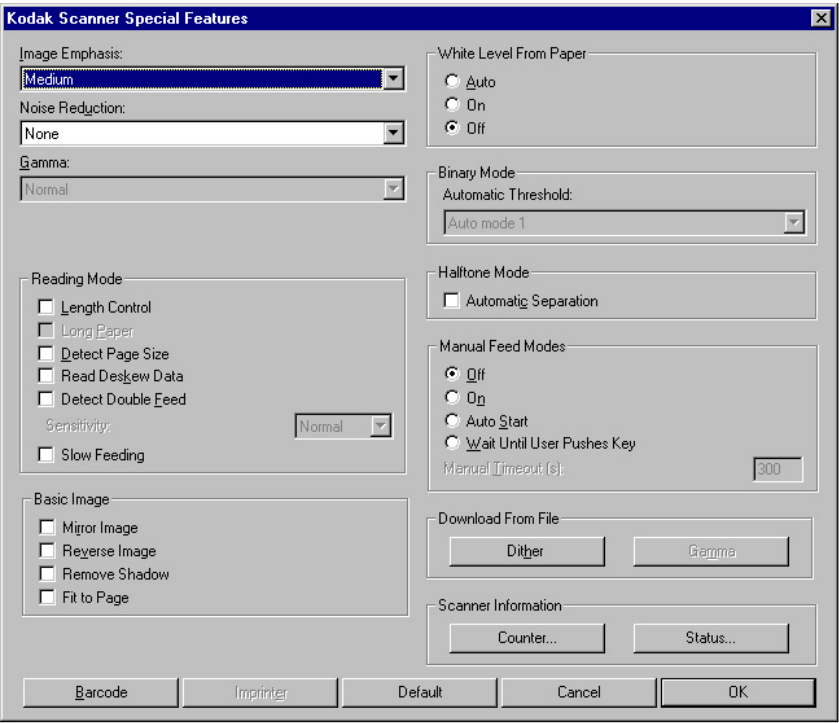


- Units—select mm, inches, or pixels.
- X Position—the position from the left end of the document to the left end of the scanning area.
- Y Position—the position from the top end of the document to the top end of the scanning area.
- Width—the width of the scanning area.
- Length—the length of the scanning area.

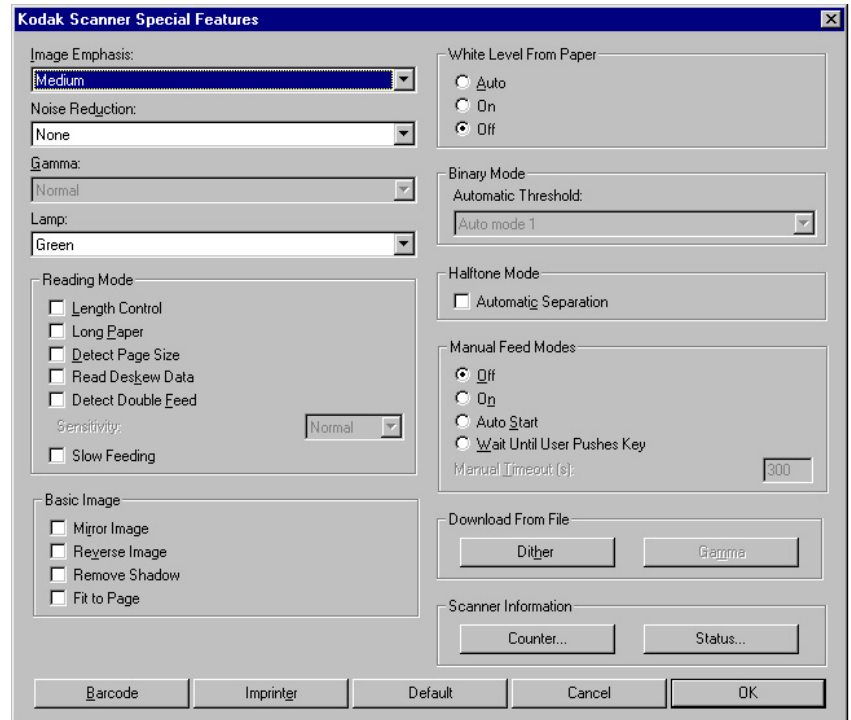
Kodak Scanner Special Features Dialog Box

This section describes the features and buttons in the Kodak Scanner Special Features dialog box. This dialog box is accessed by clicking on the *More* button in the Scanner Settings dialog box.

The Kodak Scanner Special Features dialog box shown below appears when the Scanner 1500 is selected in the Scanner list.



The Kodak Scanner Special Features dialog box shown below appears when the Scanner 2500 is selected in the Scanner list.



Buttons in the Kodak Scanner Special Features Dialog Box

Following are descriptions of the buttons in the Kodak Scanner Special Features dialog box.

Barcode

Click on the **Barcode** button to access the Barcode Parameters dialog box. This dialog box allows you to choose barcode and patch code options. Refer to the section entitled "Barcode."

Imprinter

Click on the **Imprinter** button to access the Imprinter Parameters dialog box. This dialog box allows you to choose document printer options. Refer to the section entitled "Document Printer (Imprinter)."

Default

Click on the **Default** button to return all settings in the Kodak Scanner Special Features dialog box to their predetermined factory settings.

Cancel

Click on the **Cancel** button to dismiss the dialog box without saving any changes.

OK

Click on the **OK** button to accept all of the selections.

Image Emphasis

Image Emphasis allows you to adjust the softness or sharpness of the scanned image. Choose one of the following image emphasis levels: High, Medium, Low, None, and Smooth. The default is Medium.

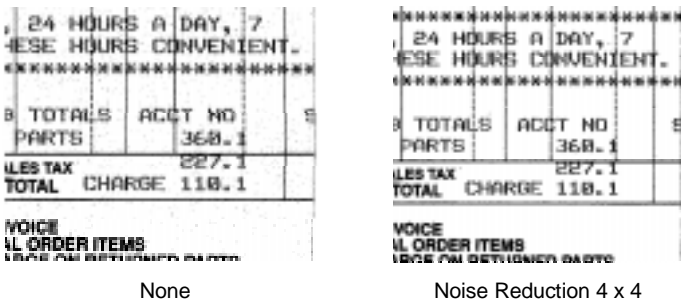


Noise Reduction

Unwanted black speckles or splotches in a scanned document are referred to as noise. **Noise Reduction** improves image clarity by removing black spots, dust, or voids in white areas. Choose a noise reduction level in the *Noise Reduction* drop-down list box. The default is “None.”

The more noise in a scanned image, the larger the compressed file size. Also, if images are being produced for an OCR system (a system that can read text from an image produced by a scanner), too much noise may lessen the reliability and read rate of the OCR system.

While choosing the larger matrix decreases large noise, commas (,) or decimal points (.) may disappear as well. *Noise Reduction* is valid only in Binary mode. Using *Noise Reduction* is not recommended when using a *Dither* setting.



Gamma

The **Gamma** option allows you to define the gamma curve setting for normal scanning and computer screen viewing. Choose one of the five gamma curves in the *Gamma* drop-down list box. There are standard and CRT levels in a gamma curve. If you intend to view the scanned images on a computer screen, select “CRT.”

When “User Download” is selected, you must specify a gamma pattern (*.PXG file). Click on the *Gamma* button in the Download From File group box and select a gamma pattern in the file selection box.

A gamma setting can be specified only when a Dither pattern, an Error Diffusion pattern for Binary mode, or a Grayscale mode is selected.

Lamp

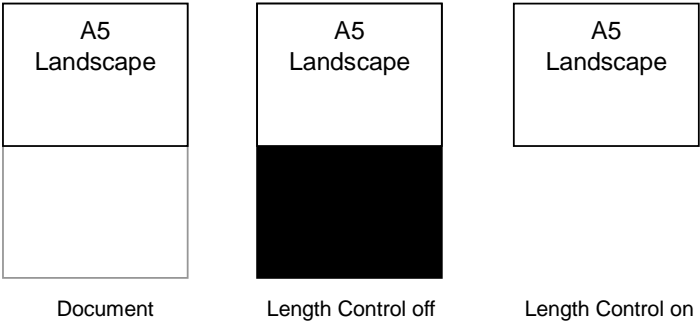
Select “Red” in the **Lamp** box to allow the scanner to perform red dropout color. The green lamp is the normal setting. When red dropout is specified, most red characters, lines, or illustrations will not be captured when a document is scanned.

NOTE: This feature is available only on the Scanner 2500.

Length Control

When **Length Control** is selected, the scanned image length is automatically determined. Different length documents will be detected and scanned accordingly, thereby conserving memory.

By using *Length Control*, the scanner does not use excessive memory. For example, if you are simultaneously scanning A4 and A5 size documents, and the A5 size is in a horizontal position and *Length Control* is off, the A5 horizontal document will be scanned as A4 size. The bottom half of the paper will become a black image. If *Length Control* is on, the A5 horizontal document is scanned as horizontal A5.



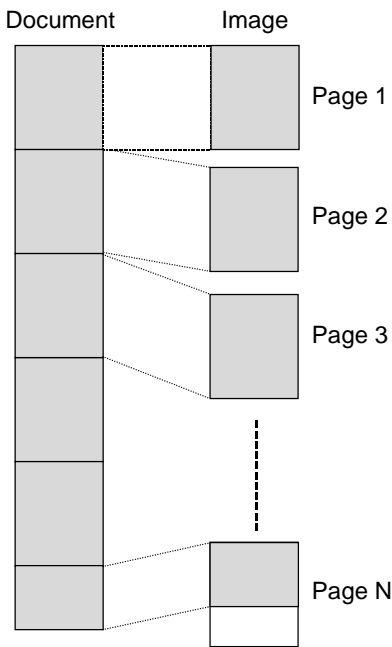
Long Paper

When **Long Paper** is enabled, a lengthy type of document, such as an oil drill chart or a cardiogram, can be captured.

NOTE: This feature is available only on the Scanner 2500.

The scanned image is divided and filed in the size selected in the *Page Size* drop-down list box.

The scannable length capability differs by the size of available memory. Refer to the table on the next page for details.



The length that can be scanned is determined by the memory size.

Scanner Memory	dpi	Document Width	Longest Document Size	Comments
8 MB (no additional memory added)	200	Letter	8 letter size pages (11 inches long)	16 images when scanning duplex
72 MB	200	Letter	30 letter size pages (11 inches long)	60 images when scanning duplex
8 MB	100	Letter	35 letter size pages	70 images when scanning duplex
72 MB	100	Letter	60 letter size pages	120 images when scanning duplex

When you enable *Long Paper*:

- Scanner speed decreases.
- The straight paper pass is recommended. (For more information about the paper pass, refer to the scanner's User's Guide.)
- Multiple page detection and jam detection do not register. If a document jams during scanning, cancel the scan from the application or open the scanner door and stop scanning.

NOTE: *Long Paper* is not available when *Read Deskew Data* or *Detect Page Size* is enabled.

Detect Page Size

When **Detect Page Size** is enabled, different size paper can be scanned without having to reconfigure the *Paper Size* function. Size is determined by paper width, not length.

This feature detects the following paper sizes: Legal, Letter, A3, A4, A5, A6, B4, B5, and B6.

Set documents of different sizes on the left side of the feeder. The scanner detects the document size by the document guide positions.

NOTE: *Detect Page Size* is not available when *Long Paper* is enabled.

Read Deskew Data

Enable **Read Deskew Data** to detect the skewing of a document and notify the application when a skewed document occurs.

NOTE: *Read Deskew Data* is not available when *Long Paper* is enabled.

Detect Double Feed

When **Detect Double Feed** is enabled, multiple feed documents (two or more documents scanned simultaneously) will be detected.

Sensitivity—when you enable *Detect Double Feed*, *Sensitivity* is also enabled. Select one of the following detection sensitivities:

- High—select this when you scan thick paper.
- Low—select this when you scan thin paper.
- Normal—select this when you scan standard paper.

NOTES: The scanner uses an ultrasonic wave to detect multiple feed documents. Document thickness and wrinkles may cause false reads.

When you scan important documents, check the number of sheets of a document and the number of scanned images to verify that all documents have been scanned.

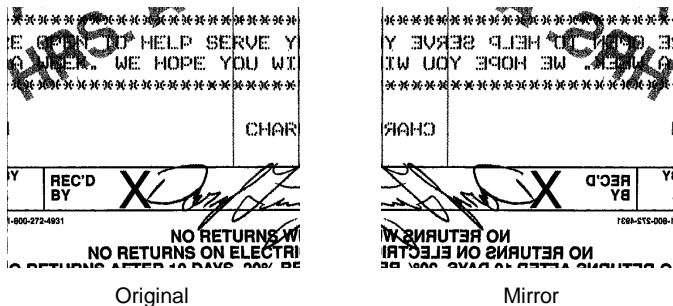
Slow Feeding

Slow Feeding allows you to change the feeder speed in order to scan a thin, folded, creased, or curled document in the automatic document feeder. Before scanning, straighten the document and select the *Slow Feeding* check box.

NOTE: Enable *Slow Feeding* when *Long Paper* is selected.

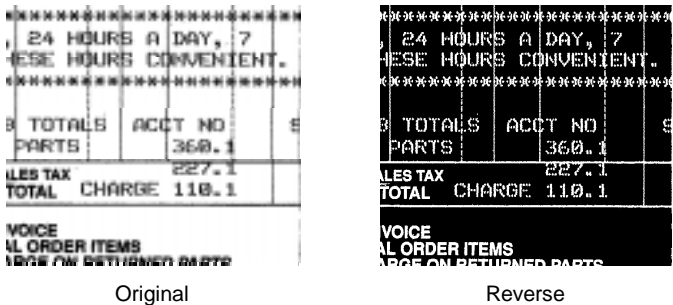
Mirror Image

Select **Mirror Image** to flip scanned images to create mirror images.



Reverse Image

Select **Reverse Image** to reverse the color of the scanned image so that black areas are white and white areas are black.



Remove Shadow

Enable **Remove Shadow** to remove any black lines which may appear at the top and bottom of a scanned image.

When this feature is enabled, about 3 mm of the top and the bottom of the scanned image become white.

Fit to Page

Selecting **Fit to Page** allows you to specify whether documents are scanned at actual size or reduced (Fit to Page) size.

Normally, the scanner scans at 100% of the actual page size. Some of the data on the edges of the page may be lost. When *Fit to Page* is enabled, the scanner shrinks the image to fit the scanned page.

White Level
From Paper

When **White Level From Paper** is on, the first 3 mm of each document is analyzed and the background brightness level is adjusted so the background of the scanned document becomes white. *White Level From Paper* is “Off” when *Dither* or *Grayscale* is enabled.

- Auto—when *Dither* and *Binary* are set to “None,” white level is set from a preset white color definition.
- On—white level is set from the first 3 mm of a scanned document.
- Off—white level is set according to the white level calibration strip in the scanner (not the scanned document).

ORDER#	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6			* KARD	4/1 GAL	SYRUP LIGHT KARD RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

Original

ORDER#	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6			* KARD	4/1 GAL	SYRUP LIGHT KARD RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

Auto

ORDER#	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6			* KARD	4/1 GAL	SYRUP LIGHT KARD RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

On

ORDER#	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6			* KARD	4/1 GAL	SYRUP LIGHT KARD RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

Off

If you scan colored paper (such as red or blue), the scanned paper’s background color may cause the noise level to increase.

NOTE: The document color 3 mm from the upper edge is detected. If a document contains colors that are different from the 3 mm sampled section color, this function may not work correctly.

Binary Mode Automatic Threshold

Selecting **Automatic Threshold** automatically sets *Brightness*, *Contrast*, *White Level From Paper*, *Gamma*, *Noise Reduction*, and *Image Emphasis* in accordance with the scanning resolution. *Automatic Threshold* is valid only when a binary mode is specified in *Mode*.

Select the mode best suited for the application:

- Mode 1—for dark documents.
- Mode 2—for normal documents.
- Mode 3—for light documents.

Halftone Mode Automatic Separation

When **Automatic Separation** is enabled, the scanner automatically recognizes and separates text and photo. This function automatically sets tonal gradation type. The text is scanned in binary mode and the photo image areas are scanned in dither mode specified in *Dither*. *Automatic Separation* is valid only when a binary mode is specified in *Mode*.



Binary mode



Error Diffusion



Automatic Separation

NOTES: Depending on the document, the text and photograph(s) may not be perfectly separated.

If photographs are always located in the same positions, instead of using *Automatic Separation*, you could define a region and select a dither pattern for that region.

Manual Feed Modes

The **Manual Feed Modes** group box allows you to configure the feeder in different ways, from a manual feed mode so you can scan pages one by one, to a mode where you only have to place paper in the feeder to begin scanning.

Choose a manual feed mode:

- **Off**—*Manual Feed* is off.
- **On**—you can insert documents one by one. Insertion of a document starts scanning.
- **Auto Start**—when documents are placed in the feed tray, scanning starts automatically. When scanning is finished, the scanner waits for more documents. Scanning starts again after you place more documents in the feed tray.
- **Wait Until User Pushes Key**—place documents in the feed tray and press the scanner's Stop/Start button to start scanning. When scanning is finished, the scanner waits for more documents. Scanning starts again after you place more documents in the feed tray and press the scanner's Stop/Start button.

Manual Timeout(s)—when you enable a *Manual Feed* mode, *Manual Timeout(s)* is also enabled. You can specify a time delay setting from 1–300 seconds. The default is 300 seconds (5 minutes). If a document is not fed manually within the specified time, the scanner returns to automatic feeding mode.

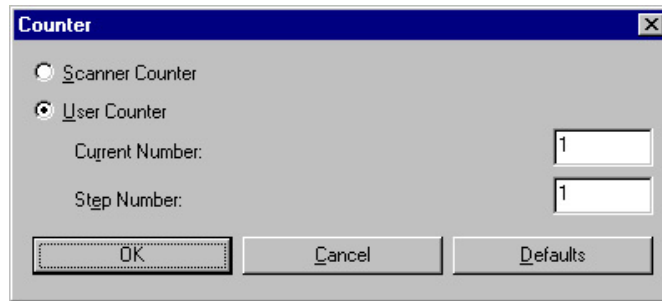
Download From File

The *Dither* and *Gamma* buttons in the **Download From File** group box allow you to access dither and gamma files.

Scanner Information

The *Counter* and *Status* buttons in the **Scanner Information** group box allow you to check the scan count and roller status.

Click on the *Counter* button to access the Counter dialog box to view the current scan count or to set up the counter.



Scanner Counter—when this button is selected, the number of sheets scanned appears only on the scanner’s LCD display.

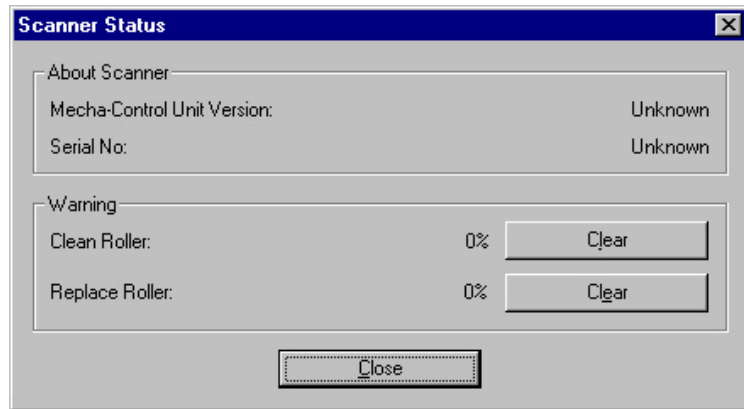
User Counter—when this button is selected, the number of sheets scanned appears only in the Counter dialog box. The **Current Number** and the **Step Number** boxes are enabled.

- **Current Number**—the value that appears in this box is the number of sheets scanned multiplied by the step value that appears in the *Step Number* box.
- **Step Number**—you can multiply the value in the *Current Number* box by specifying a value in the *Step Number* box. Allowable step values are 1 through 9.

For example, when you enter “1” in the *Step Number* box, the value in the *Current Number* box increments in multiples of one (i.e., 1, 2, 3, . . .) for each sheet that is scanned.

Enter a step value of “2” to increment the *Current Number* value in multiples of two (i.e., 2, 4, 6, . . .) for each sheet that is scanned.

Click on the *Status* button to access the Scanner Status dialog box to view roller cleaning and replacement guidelines.



Refer to the scanner's User's Guide for detailed information about cleaning and replacing the rollers. When you have cleaned or replaced the rollers, click on the *Clear* button to reset the roller status.

Barcode

The scanner can read barcodes. The barcode data is analyzed and the information is sent in ASCII code to an application that supports barcode reading (e.g., *Kodak Digital Science Capture Software*).

IMPORTANT: Your application must support barcode reading.

The following barcode types can be detected:



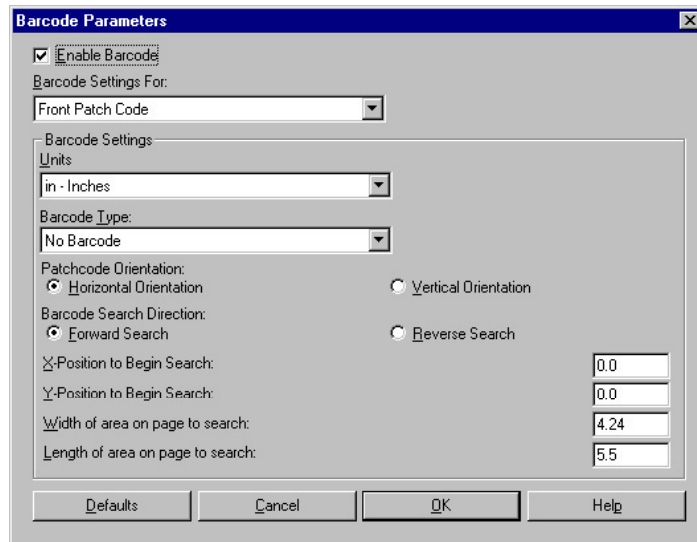
NOTES: Scanner speed decreases when you detect barcodes.

Barcode is not available when *Long Paper* and *Detect Paper Size* are enabled.

Setting up for Barcode Reading

1. Select the document size and resolution in the Scanner Settings dialog box.
2. Click on the *More* button to access the Scanner Special Features dialog box.
3. Click on the *Barcode* button to access the Barcode Parameters dialog box.

4. Check the *Enable Barcode* box.

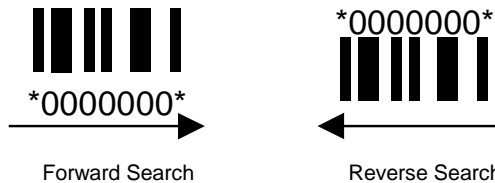


The image shows a 'Barcode Parameters' dialog box. It has a title bar with a close button. Inside, there is a checked checkbox labeled 'Enable Barcode'. Below it is a dropdown menu labeled 'Barcode Settings For:' with 'Front Patch Code' selected. A section titled 'Barcode Settings' contains a 'Units' dropdown set to 'in - Inches', a 'Barcode Type' dropdown set to 'No Barcode', and two radio buttons for 'Patchcode Orientation': 'Horizontal Orientation' (selected) and 'Vertical Orientation'. Below these are two radio buttons for 'Barcode Search Direction': 'Forward Search' (selected) and 'Reverse Search'. At the bottom of the settings section are four input fields: 'X-Position to Begin Search:' (0.0), 'Y-Position to Begin Search:' (0.0), 'Width of area on page to search:' (4.24), and 'Length of area on page to search:' (5.5). At the very bottom are four buttons: 'Defaults', 'Cancel', 'OK', and 'Help'.

5. Select the barcode region in the *Barcode Settings For* drop-down list box.

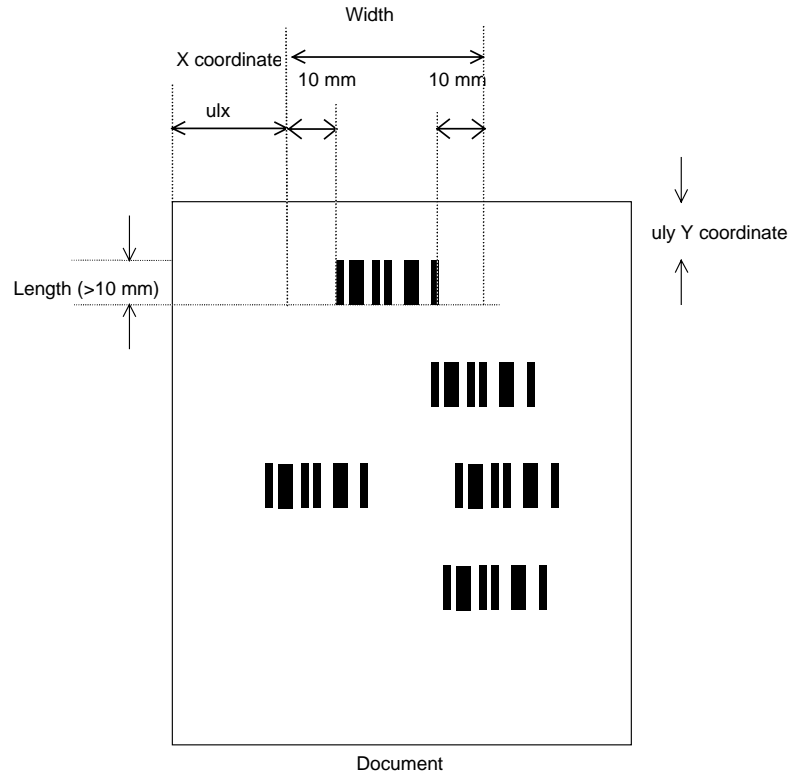
Ten regions can be specified: five front barcodes (Front #1-Front #5) and five back barcodes (Back #1-Back #5).

6. Select a measurement in the *Units* drop-down list box in pixels, mm, or inches.
7. Select the barcode in the *Barcode Type* drop-down list box.
8. Choose the direction of the barcode (Forward Search or Reverse Search) in *Barcode Search Direction*.



9. Set the barcode area:

- X-Position to Begin Search—must be 10 mm (0.39 inches) to the left of the first barcode data to be read.
- Y-Position to Begin Search—the length from the top of the document to the upper edge of the barcode.
- Width of area on page to search—set this value 20 mm (0.79 inches) greater than the actual width of the barcode.
- Length of area on page to search—set this value equal to the entire barcode search length. If the search area is large (e.g., an 8.5 x 11-inch region) then the scanning time will increase considerably.



Detecting Patch Codes

Patch codes can be used to index documents via the industry standard patch codes II, III, and T.

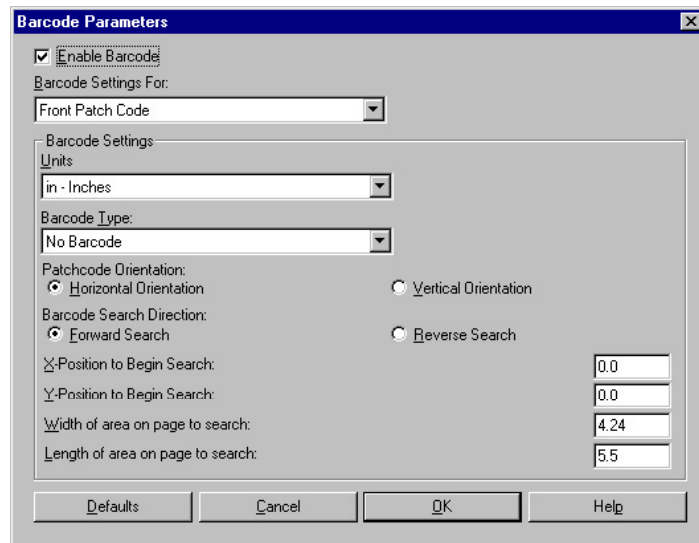
The patch code data is analyzed and the information is sent to an application that supports patch code reading (e.g., *Kodak Digital Science Capture Software*).

IMPORTANT: *Your application must support patch code reading.*

Select a patch code by the same method used to select a barcode.

NOTE: Scanner speed decreases when you detect patch codes.

1. Click on the *More* button to access the Scanner Special Features dialog box.
2. Click on the *Barcode* button to access the Barcode Parameters dialog box.
3. Choose a patch code in the *Barcode Settings* drop-down list box.



The image shows a Windows-style dialog box titled "Barcode Parameters". It has a standard title bar with a close button (X). The dialog contains several settings:

- ☒ **Enable Barcode**
- Barcode Settings For:** A dropdown menu currently showing "Front Patch Code".
- Barcode Settings:** A group box containing:
 - Units:** A dropdown menu showing "in - Inches".
 - Barcode Type:** A dropdown menu showing "No Barcode".
 - Patchcode Orientation:** Two radio buttons: ☒ **Horizontal Orientation** and ☐ **Vertical Orientation**.
 - Barcode Search Direction:** Two radio buttons: ☒ **Forward Search** and ☐ **Reverse Search**.
 - X-Position to Begin Search:** A text input field with the value "0.0".
 - Y-Position to Begin Search:** A text input field with the value "0.0".
 - Width of area on page to search:** A text input field with the value "4.24".
 - Length of area on page to search:** A text input field with the value "5.5".

At the bottom of the dialog are four buttons: **Defaults**, **Cancel**, **OK**, and **Help**.

The Barcode Parameters dialog box lists the Front Side and Back Side settings.

4. Choose the direction of scanning (Horizontal Orientation or Vertical Orientation) in *Patchcode Orientation*.



Vertical Orientation

Document Printer (Imprinter)

The **Imprinter** button in the Scanner Special Features dialog box allows you to access the Imprinter Parameters dialog box in which you can set up parameters for the optional document printer. The document printer can print character strings on a document.

- Pre-Imprinter—prints on the front of the document before scanning. The printing becomes part of the scanned image. (Available for the Scanner 1500 and the Scanner 2500.)
- Post-Imprinter—prints on the back of the document after scanning. The printing does not become part of the scanned image. (Available only for the Scanner 2500.)

Printable Characters

The chart below shows the characters that the document printer can print on the scanned document.

SP	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[]	^	_
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
q	r	s	t	u	v	w	x	y	z	{		}	-		

**Printing a Counter, Date,
Time, or Fixed String**

Use the following strings to print any combination of a counter, a date, a time, or a fixed string.

Counter

#:9999999

The first pound character (#) encountered in the string is replaced with the value specified in the **Counter** dialog box. Every successive pound character (#) is printed in sequential order.

Extra spaces are padded with zeroes (0) when %0# is specified.

Date

String	Example
%1d: YY/MM/DD	97/02/20
%2d: YYYY/MM/DD	1997/02/20
%3d: MM/DD/YY	12/13/97
%4d: DD/ABBREVIATED MONTH/YY	13/Dec/97

NOTE: YY or YYYY: year, MM: month, DD: day

Time

String	Example
%1t: HH:MM	11:27
%2t: HH:MM:SS	10:46:34

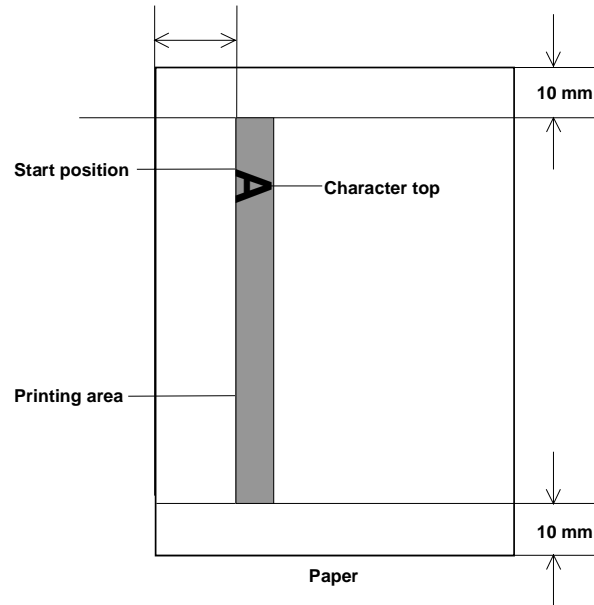
NOTE: HH: hour, MM: minutes, SS: seconds

Fixed String

Almost any text string can be a fixed string that can be printed on a scanned document. Up to 72 characters can be printed. This includes any variable information, such as a counter, date, or time. Only the characters shown in the chart on the previous page may be used in a fixed string.

Printing Start Position

Printing is done vertically from the top of the paper. The character top ("A" in the diagram below) points to the right edge of the document.

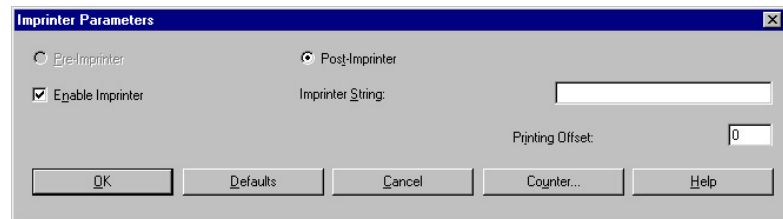


The printing start position is specified in the *Printing Offset* text box in the Imprinter Parameters dialog box.

The horizontal printing position (the distance from the right or left margin) is set mechanically on the document printer in the scanner.

Setting up for Document Printing

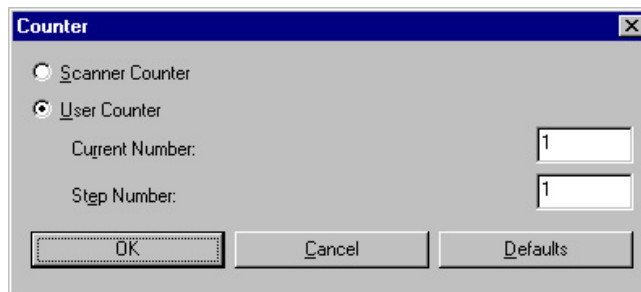
1. Click on the *More* button to access the Scanner Special Features dialog box.
2. Click on the *Imprinter* button to access the Imprinter Parameters dialog box.
3. Check the *Enable Imprinter* box.



4. Type the character sequence in the *Imprinter String* text box. A time and date can also be specified.
5. Type the printing start position in the *Printing Offset* text box.

Counter

Click on the **Counter** button in the Imprinter Parameters dialog box to access the Counter dialog box to view the current scan count or to set up the counter.



Scanner Counter—when this button is selected, the number of sheets scanned appears only on the scanner's LCD display.

User Counter—when this button is selected, the number of sheets scanned appears only in the Counter dialog box. The **Current Number** and the **Step Number** boxes are enabled.

- **Current Number**—the value that appears in this box is the number of sheets scanned multiplied by the step value that appears in the *Step Number* box.
- **Step Number**—you can multiply the value in the *Current Number* box by specifying a value in the *Step Number* box. Allowable step values are 1 through 9.

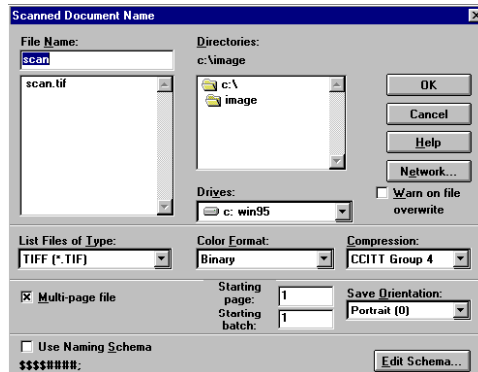
For example, when you enter “1” in the *Step Number* box, the value in the *Current Number* box increments in multiples of one (i.e., 1, 2, 3, . . .) for each sheet that is scanned.

Enter a step value of “2” to increment the *Current Number* value in multiples of two (i.e., 2, 4, 6, . . .) for each sheet that is scanned.

Compression

Scanned image data can be compressed to decrease file sizes. When **Compression** is specified, files transmitted from the scanner decrease in size, thus allowing more images to be stored on the host PC.

Select a compression type in the *Compression* box in the Scanned Document Name dialog box.



Compression cannot be used for some applications or image file formats. For example, you cannot use Compression for the bitmap format (*.bmp) used by Windows. Choose a compression form that is compatible to the one your application supports.

The following compression methods are available:

- CCITT-G3—an old version of the CCITT compression standard which should be used only with older imaging systems. This can be used only for bitonal images.
- CCITT-G4—the current industry standard. This can be used only for bitonal images.
- JBIG—has a high compression rate for bitonal and grayscale images and significantly better compression rate for dithered images in comparison with CCITT-G4. However, JBIG does not have the same industry acceptance as CCITT-G4.

NOTE: For documents composed almost entirely of photographs scanned by Dither using G3 and G4 compression, the compressed file may be larger than the uncompressed file.

TWAIN Data Source

Installation

The TWAIN Data Source is included with the scanner. You can install the driver from the CD.

After installation of the driver is complete, install your application software on the host PC.

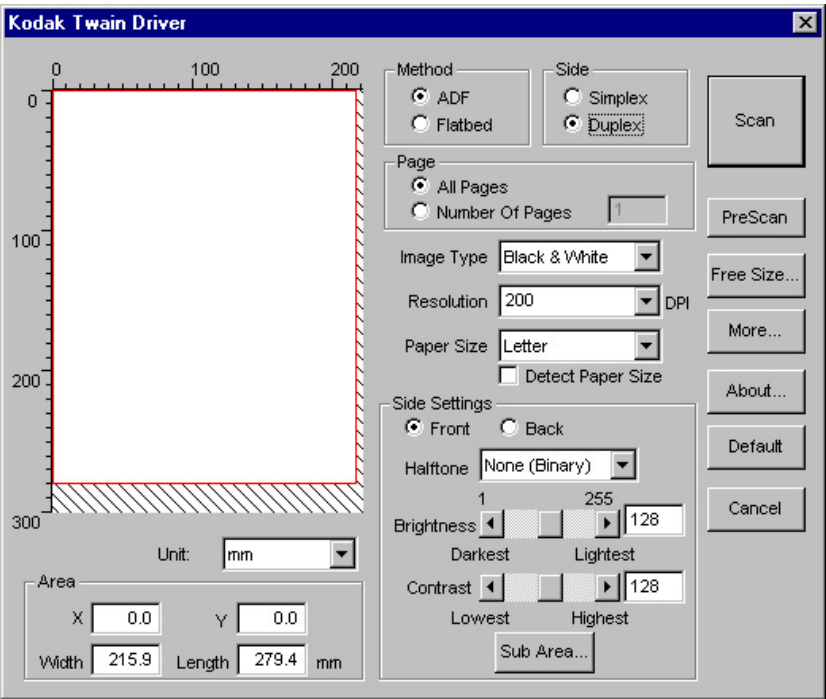
After your application software is loaded and launched, left-click on **File** and choose *Select Source*. The Scanner list allows you to select the scanner you want to use. The highlighted scanner is the scanner currently in use.

NOTE: If your PC is running Windows NT 4.0, the 32-bit version ASPI Manager is required. You can install this by installing EZ-SCSI by Adaptec Co. or SCSI installer for Windows 95/98/NT.

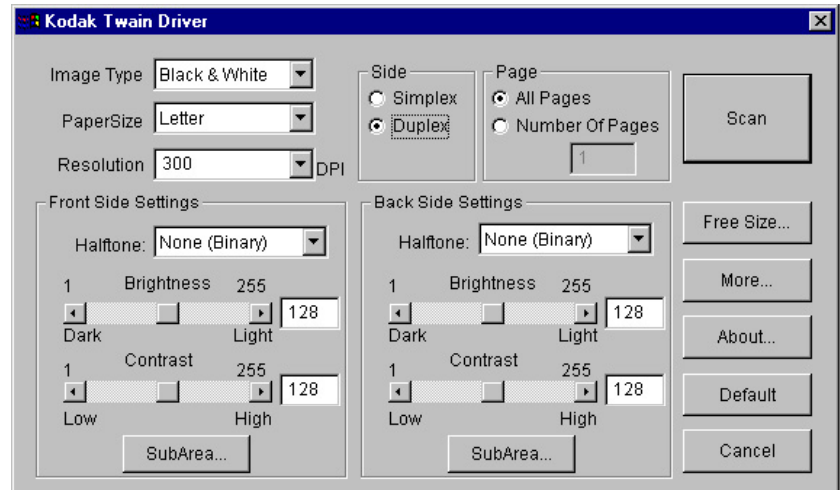
Kodak Twain Driver Dialog Box

This section describes the features and buttons in the Kodak Twain Driver dialog box.

The Kodak Twain Driver dialog box shown below appears when the Scanner 1500 is selected in the Scanner list.



The Kodak Twain Driver dialog box shown below appears when the Scanner 2500 is selected in the Scanner list.



Buttons in the Kodak Twain Driver Dialog Box

Following are descriptions of the buttons in the Kodak Twain Driver dialog box.

Scan	Click on the Scan button to accept all selections and begin scanning.
PreScan	Click on the PreScan button to scan a document so you can check the selected scanning settings.
Free Size	Click on the Free Size button to access the Free Paper Size dialog box in which you can create and save a custom page size. Refer to the section entitled "Creating a Custom Paper Size."
More	Click on the More button to access the Scanner Special Features dialog box. Refer to the section entitled "More Settings Dialog Box."
About	Click on the About button for version information for the driver and scanner.
Default	Click on the Default button to return all settings to their predetermined factory settings.
Cancel	Click on the Cancel button to dismiss the dialog box without saving any changes.

Side

You can specify single-sided or double-sided scanning in the **Side** group box by selecting the *Simplex* or *Duplex* radio button.

NOTES: Both sides of the document are scanned at a same time in duplex scanning. The front side of the image/page is output first, then the back side of the image/page.

Side is always available for the Scanner 2500. *Side* is not available for the Scanner 1500 unless *ADF* is selected in the Method group box.

Method

The **Method** group box allows you to indicate whether you are using the automatic document feeder (ADF) or the flatbed when you are scanning on the Scanner 1500. Select the *ADF* or *Flatbed* radio button in the Method group box.

NOTE: This option is available only for the Scanner 1500.

Page

The **Page** group box contains options that allow you to specify whether All Pages or a specific Number Of Pages are to be scanned.

NOTES: If you select *Number Of Pages*, type a number in the text box to indicate the amount of pages to be scanned.

If you are scanning in duplex mode, enter "2" for the number of pages when scanning one sheet (front side and back side).

Image Type

Choose a grayscale or binary (black and white) scanning format in the **Image Type** drop-down list box. Select the format that is best suited to your application. Grayscale provides better image quality but requires more scanning time and memory.



Grayscale



Binary

NOTE: Additional memory may be required for grayscale scanning, depending on the selected resolution and paper size. Refer to the chapter entitled *Memory Requirements* for more information about memory.

Resolution (DPI)

Resolution or dots per inch (dpi) indicates the scanning resolution, which largely determines the quality of the scanned image. The greater the resolution, the better the reproduction. However, scanning at a higher resolution also increases scanning time and file size. This function sets the resolution of the main scan and sub-scan areas. The industry standard is 200 dpi (about 8 pixels/mm).

You can choose a preset value in the Resolution box or type the desired value. The default value is 300 dpi. Following are the available resolutions:

- Scanner 1500—100-600 dpi (1 dpi/step)
- Scanner 2500—100-600 dpi (1 dpi/step)

NOTE: Changing the resolution affects the *Area*, *Region*, *Halftone* (Dither), and *Barcode* settings. Specify the resolution before you select these functions.

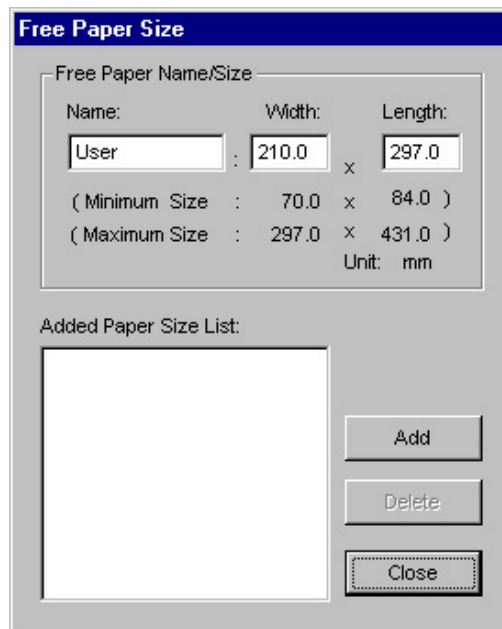
Paper Size

This function determines the scanning area by a pre-determined size. The default paper size is set when a scanner is first selected. You can choose a paper size in the **Paper Size** drop-down list box.

NOTE: Changing the paper size affects the *Area*, *Region*, *Halftone* (Dither), and *Barcode* settings. Specify the paper size before you select these functions.

Creating a Custom Paper Size

You can create and save a custom page size, as long as it does not exceed the maximum page size. Click on the *Free Paper Size* button in the Kodak Twain Driver dialog box to access the Free Paper Size dialog box. You can save up to ten page sizes.



The **Free Paper Size** dialog box is used to define a custom paper size. It features a title bar with the text "Free Paper Size". Below the title bar is a section labeled "Free Paper Name/Size" which contains three input fields: "Name:" with the text "User", "Width:" with the value "210.0", and "Length:" with the value "297.0". These fields are separated by a colon and an "x" symbol. Below these fields, there are two lines of text indicating size constraints: "(Minimum Size : 70.0 x 84.0)" and "(Maximum Size : 297.0 x 431.0)". At the bottom right of this section, it says "Unit: mm". Below the "Free Paper Name/Size" section is a large empty rectangular box labeled "Added Paper Size List:". To the right of this box are three buttons: "Add", "Delete", and "Close".

Creating a New Paper Size

1. Type the paper name, width, and length into the appropriate text boxes in the Free Paper Name/Size group box in the Free Page Size dialog box.
2. Click on the *Add* button.

The new paper size is registered and the name appears in the Added Paper Size List box.

Deleting a Paper Size

1. Click on the paper size you want to delete in the *Added Paper Size* list in the Free Paper Size dialog box.
2. Click on the *Delete* button.

The paper size is removed from the Added Paper Size List box.

Detect Paper Size

When **Detect Paper Size** is enabled in the Kodak Twain Driver dialog box for the Scanner 1500, different sized paper can be scanned without having to reconfigure the Paper Size function. Size is determined by paper width, not length.

This feature detects the following paper sizes: Legal, Letter, A3, A4, A5, A6, B4, B5, and B6.

Set documents of different sizes on the left side of the feeder. The scanner detects the document size by the document guide positions.

Halftone (Dither)

Dithering is a technique for reproducing halftone images, such as a photo, in binary mode.

Two pixel levels are used to represent the entire grayscale, thereby reducing the levels of gray required displaying an image. Using a dithering pattern requires less memory than using a grayscale mode.

Choose a dithering method in the **Halftone** drop-down list box for the Front Side Settings and Back Side Settings group boxes: None (Binary), Bayer Dither 64 (64 steps), Bayer Dither 16 (16 steps), Halftone Dot 32, Halftone Dot 64, and Error Diffusion.



Original



Bayer Dither 64



Bayer Dither 16



Halftone Dot 32



Halftone Dot 64



Error Diffusion

Brightness

The **Brightness** option allows you to adjust the image brightness, making it lighter or darker.

Adjust the brightness setting by dragging the Brightness sliding bar in the Front Side Settings or Back Side Settings group box. Select a value from 1-255. The default is 128. The smaller the number, the darker the image. Or you can type a value (1-255) in the Brightness text box. Scan the document to check the brightness.



Brightness 51



Brightness 128



Brightness 205

A darker setting is recommended for blurred character documents. With a brighter setting, background noise in a color document disappears.

NOTE: Refer to the section entitled “Automatic Threshold” for information about setting automatic brightness by Binary mode.

Contrast

The **Contrast** option sets the image contrast by adjusting the difference between black and white, thereby making an image sharper or softer.

In a low-contrast setting, the difference between black and white is small, so the image is softer. In a high-contrast setting, the difference between black and white is large, so the image is clearer. Select a contrast value from 1-255. The default is 128.



Contrast 51



Contrast 128



Contrast 205

Adjust the contrast setting by dragging the Contrast sliding bar in the Front Side Settings or Back Side Settings group box. Or you can type a value (1-255) in the *Contrast* text box. Scan the document to check the contrast.

Area

The **Area** group box shows the area settings for a region.

- Units—select mm or inches.
- X—the position from the left end of the document to the left end of the scanning area.
- Y—the position from the top end of the document to the top end of the scanning area.
- Width—the width of the scanning area.
- Length—the length of the scanning area.

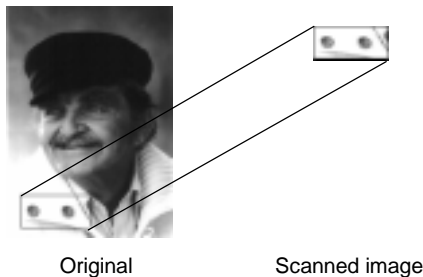
NOTE: This feature is available only for the Scanner 1500.

Sub Area

You can define a brightness level and dither setting for a specific area of an image that is different from the brightness level and dither setting of the whole image.

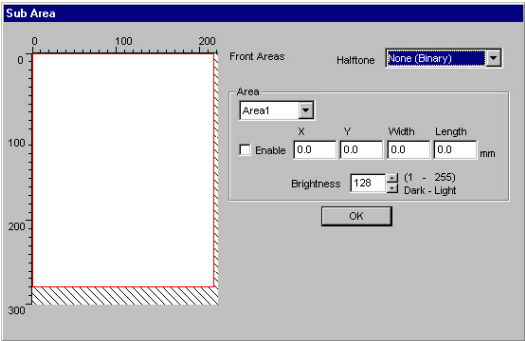
This way, a picture can be dithered while the rest of the page remains undithered, or a faint stamp can be enhanced by setting a lower brightness than the rest of the page. You can define three regions per side. Each region can have its own brightness level, but all regions must use the same dither setting.

Each scanning side is settable for up to three regions. This function is available only for Binary mode.

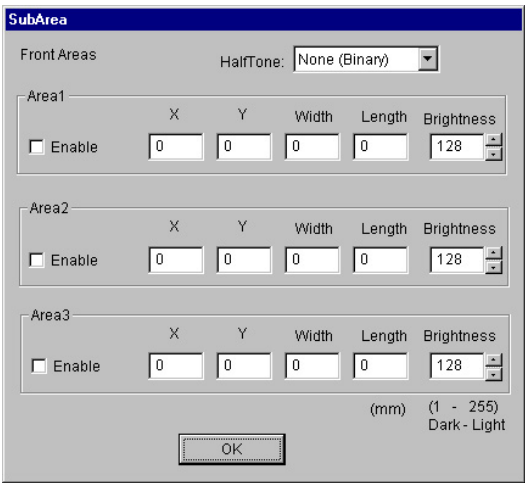


Specifying an Area

To capture a portion of an image, click on the *Sub Area* button in the Front Side Settings group box or in the Back Side Settings group box to access the Sub Area dialog box.



NOTE: The Sub Area dialog box shown above appears for the Scanner 1500. The Sub Area dialog box shown below appears for the Scanner 2500.



Area settings are determined by the X and Y positions and the width and length coordinates. Set the scanning area in the Area group box on the basis of the size specified in the *Paper Size* drop-down list box. You can also use the mouse to define the scanning area in the window.

More Settings Dialog Box

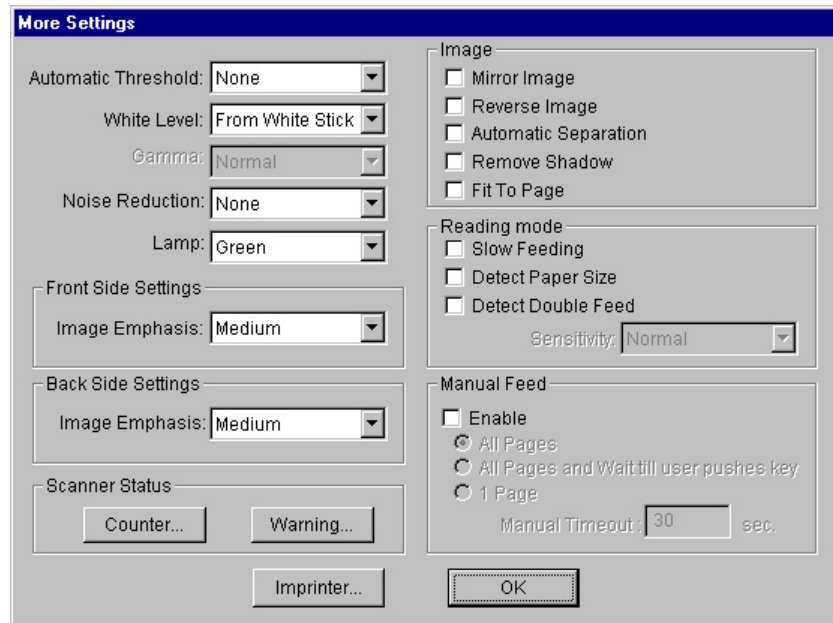
This section describes the features and buttons in the More Settings dialog box. This dialog box is accessed by clicking on the *More* button in the Kodak Twain Driver dialog box.

The More Settings dialog box shown below appears when the Scanner 1500 is selected in the Scanner list.

The **More Settings** dialog box is shown with a blue title bar. It contains several sections of settings:

- Automatic Threshold:** A dropdown menu set to **None**.
- White Level:** A dropdown menu set to **From White Stick**.
- Gamma:** A dropdown menu set to **Normal**.
- Noise Reduction:** A dropdown menu set to **None**.
- Image** section (checkboxes):
 - ☐ Mirror Image
 - ☐ Reverse Image
 - ☐ Automatic Separation
 - ☐ Remove Shadow
 - ☐ Fit To Page
- Reading mode** section (checkboxes and dropdown):
 - ☐ Slow Feeding
 - ☐ Detect Double Feed
 - Sensitivity:** A dropdown menu set to **Normal**.
 - ☐ Stop at Skew
- Front Side Settings** section (dropdown):
 - Image Emphasis:** A dropdown menu set to **Medium**.
- Back Side Settings** section (dropdown):
 - Image Emphasis:** A dropdown menu set to **Medium**.
- Scanner Status** section (buttons):
 - Counter...** button
 - Warning...** button
 - Imprinter...** button
- Manual Feed** section (radio buttons and text):
 - ☐ Enable
 - ☒ All Pages
 - ☐ All Pages and Wait till user pushes key
 - ☐ 1 Page
 - Manual Timeout :** A text box containing **30** followed by **sec.**
- OK** button at the bottom right.

The More Settings dialog box shown below appears when the Scanner 2500 is selected in the Scanner list.



The dialog box is titled "More Settings" and contains several sections for configuring the scanner. On the left, there are dropdown menus for "Automatic Threshold" (set to None), "White Level" (set to From White Stick), "Gamma" (set to Normal), "Noise Reduction" (set to None), and "Lamp" (set to Green). Below these are three sections: "Front Side Settings" with "Image Emphasis" set to Medium, "Back Side Settings" with "Image Emphasis" set to Medium, and "Scanner Status" with "Counter..." and "Warning..." buttons. On the right, there are three sections: "Image" with checkboxes for "Mirror Image", "Reverse Image", "Automatic Separation", "Remove Shadow", and "Fit To Page"; "Reading mode" with checkboxes for "Slow Feeding", "Detect Paper Size", and "Detect Double Feed", and a "Sensitivity" dropdown set to Normal; and "Manual Feed" with an "Enable" checkbox, three radio buttons for "All Pages", "All Pages and Wait till user pushes key", and "1 Page", and a "Manual Timeout" field set to 30 seconds. At the bottom are "Imprinter..." and "OK" buttons.

More Settings

Automatic Threshold: None

White Level: From White Stick

Gamma: Normal

Noise Reduction: None

Lamp: Green

Front Side Settings

Image Emphasis: Medium

Back Side Settings

Image Emphasis: Medium

Scanner Status

Counter... Warning...

Imprinter...

Image

☐ Mirror Image

☐ Reverse Image

☐ Automatic Separation

☐ Remove Shadow

☐ Fit To Page

Reading mode

☐ Slow Feeding

☐ Detect Paper Size

☐ Detect Double Feed

Sensitivity: Normal

Manual Feed

☐ Enable

☒ All Pages

☐ All Pages and Wait till user pushes key

☐ 1 Page

Manual Timeout: 30 sec.

OK

Buttons in the More Settings Dialog Box

Following are descriptions of the buttons in the More Settings dialog box.

Imprinter

Click on the **Imprinter** button to access the Imprinter Parameters dialog box. This dialog box allows you to choose document printer options. Refer to the section entitled “Document Printer (Imprinter).”

OK

Click on the **OK** button to accept all of the selections.

Automatic Threshold

Selecting **Automatic Threshold** automatically sets *Brightness*, *Contrast*, *White Level*, *Gamma*, *Noise Reduction*, and *Image Emphasis* in accordance with the scanning resolution. *Automatic Threshold* is valid only when a binary mode is specified in *Image Type*.

Select the mode best suited for the application:

- Mode 1—for dark documents.
- Mode 2—for normal documents.
- Mode 3—for light documents.

White Level

When **White Level** is on, the first 3 mm of each document is analyzed and the background brightness level is adjusted so the background of the scanned document becomes white. White Level is set to “From White Stick” when *Halftone* (Dither) or *Grayscale* is enabled.

- From White Stick—white level is set according to the white level calibration strip in the scanner (not the scanned document).
- From Paper—white level is set from the first 3 mm of a scanned document.
- Automatic—when *Halftone* (Dither) and *Binary* are set to “None,” white level is set from a preset white color definition.

ORDERED	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPLITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6	*		KARO	4/1 GAL	SYRUP LIGHT KARO RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

Original

ORDERED	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPLITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6	*		KARO	4/1 GAL	SYRUP LIGHT KARO RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

From White Stick

ORDERED	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPLITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6	*		KARO	4/1 GAL	SYRUP LIGHT KARO RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

From Paper

ORDERED	SHIPPED				LABEL	PACK & SIZE	DESCRIPTION	ITEM NUMBER	PORTION COST	UNIT PRICE		AMOUNT
	SLOT / WEIGHT	CASES	✓	SPLITS						W	L	
8	0903201	8			MARKON	1/100 CT	APPLE GRANNY SMITH WASH FANCY	096033	184/EA		18.48	147.84
6	2008602	6	*		KARO	4/1 GAL	SYRUP LIGHT KARO RED-#05180	390725	074/OZ		38.17	229.02
**	TOTAL DRY					**	229.02	** TOTAL PRODUCE			**	147.84

Automatic

If you scan colored paper (such as red or blue), the scanned paper’s background color may cause the noise level to increase.

NOTE: The document color 3 mm from the upper edge is detected. If a document contains colors that are different from the 3 mm sampled section color, this function may not work correctly.

Gamma

The **Gamma** option allows you to define the gamma curve setting for normal scanning and computer screen viewing. Choose one of the five gamma curves in the *Gamma* drop-down list box. There are standard and CRT levels in a gamma curve. If you intend to view the scanned images on a computer screen, select “For CRT.” Otherwise, choose “Normal.”

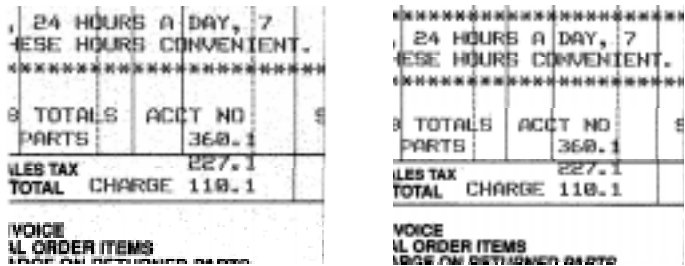
A gamma setting can be specified only when a Halftone (Dither) pattern, an Error Diffusion pattern for Binary mode, or a Grayscale mode is selected.

Noise Reduction

Unwanted black speckles or splotches in a scanned document are referred to as noise. **Noise Reduction** improves image clarity by removing black spots, dust, or voids in white areas. Choose a noise reduction level in the *Noise Reduction* box. The default is “None.”

The more noise in a scanned image, the larger the compressed file size. Also, if images are being produced for an OCR system (a system that can read text from an image produced by a scanner), too much noise may lessen the reliability and read rate of the OCR system.

While choosing the larger matrix decreases large noise, commas (,) or decimal points (.) may disappear as well. *Noise Reduction* is valid only in Binary mode. Using *Noise Reduction* is not recommended when using a *Halftone* (Dither) setting.



None

Noise Reduction 4 x 4

Lamp

Select Red in the **Lamp** box to allow the scanner to perform red dropout color. The green lamp is the normal setting. When red dropout is specified, most red characters, lines, or illustrations will not be captured when a document is scanned.

NOTE: This feature is available only on the Scanner 2500.

Image Emphasis

Image Emphasis allows you to adjust the softness or sharpness of the scanned image. Choose one of the following image emphasis levels in the Front Side Settings or Back Side Settings group boxes: High, Medium, Low, None, and Smooth. The default is Medium.



Original



Smooth

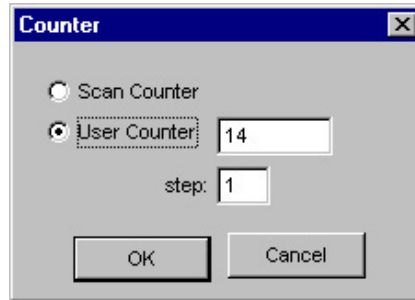


High

Scanner Status

The **Counter** and **Warning** buttons in the Scanner Status group box allow you to check the scan count and roller status.

Click on the *Counter* button to access the Counter dialog box to view the current scan count or to set up the counter.



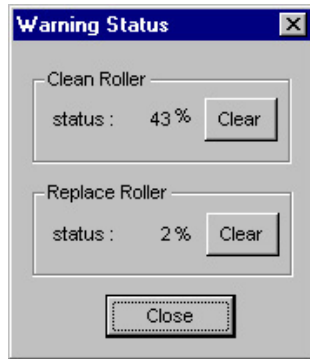
Scan Counter—when this button is selected, the number of sheets scanned appears only on the scanner's LCD display.

User Counter—when this button is selected, the number of sheets scanned appears only in the *User Counter* box. The value in this box is the number of sheets scanned multiplied by the step value that appears in the *step* box. Allowable step values are 1 through 9.

For example, when you enter a step value of "1," the value in the *User Counter* box increments in multiples of one (i.e., 1, 2, 3, . . .) for each sheet that is scanned.

Enter a step value of "2" to increment the *User Counter* value in multiples of two (i.e., 2, 4, 6, . . .) for each sheet that is scanned.

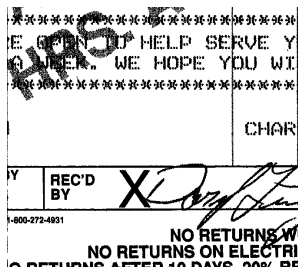
Click on the *Warning* button to access the Warning Status dialog box to view roller cleaning and replacement guidelines.



Refer to the scanner's User's Guide for detailed information about cleaning and replacing the rollers. When you have cleaned or replaced the rollers, click on the *Clear* button to reset the status.

Mirror Image

Select **Mirror Image** to flip scanned images to create mirror images



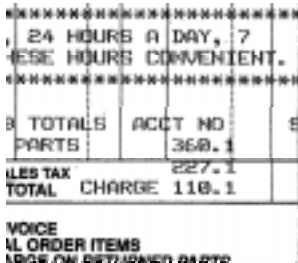
Original



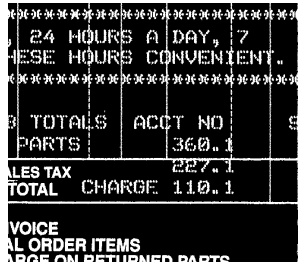
Mirror

Reverse Image

Select **Reverse Image** to reverse the color of the scanned image so that black areas are white and white areas are black.



Original



Reverse

Automatic Separation (Halftone Mode)

When **Automatic Separation** is enabled, the scanner automatically recognizes and separates text and photo. This function automatically sets tonal gradation type. The text is scanned in binary mode and the photo image areas are scanned in dither mode specified in Halftone (Dither). *Automatic Separation* is valid only when a binary mode is specified in *Image Type*.



Binary mode



Error Diffusion



Automatic Separation

NOTES: Depending on the document, the text and photograph(s) may not be perfectly separated.

If photographs are always located in the same positions, instead of using *Automatic Separation*, you could define a region and select a dither pattern for that region.

Remove Shadow

Enable **Remove Shadow** to remove any black lines which may appear at the top and bottom of a scanned image.

When this feature is enabled, about 3 mm of the top and the bottom of the scanned image become white.

Fit to Page

Selecting **Fit to Page** allows you to specify whether documents are scanned at actual size or reduced (Fit to Page) size.

Normally, the scanner scans at 100% of the actual page size. Some of the data on the edges of the page may be lost. When *Fit to Page* is enabled, the scanner shrinks the image to fit the scanned page.

Slow Feeding

Slow Feeding allows you to change the feeder speed in order to scan a thin, folded, creased, or curled document in the automatic document feeder. Before scanning, straighten the document and select the *Slow Feeding* check box.

Detect Paper Size

When **Detect Paper Size** is enabled in the More Settings dialog box for the Scanner 2500, different sized paper can be scanned without having to reconfigure the *Paper Size* function. Size is determined by paper width, not length.

This feature detects the following paper sizes: Legal, Letter, A3, A4, A5, A6, B4, B5, and B6.

Set documents of different sizes on the left side of the feeder. The scanner detects the document size by the document guide positions.

Detect Double Feed

When **Detect Double Feed** is enabled, multiple feed documents (two or more documents scanned simultaneously) will be detected.

Sensitivity—when you enable *Detect Double Feed*, *Sensitivity* is also enabled. Select one of the following detection sensitivities:

- High—select this when you scan thick paper.
- Low—select this when you scan thin paper.
- Normal—select this when you scan standard paper.

NOTES: The scanner uses an ultrasonic wave to detect multiple feed documents. Document thickness and wrinkles may cause false reads.

When you scan important documents, check the number of sheets of a document and the number of scanned images to verify that all documents have been scanned.

Stop at Skew

When **Stop at Skew** is enabled, the scanner stops scanning when a skewed document is detected.

NOTE: This feature is available only on the Scanner 1500.

Manual Feed

Manual Feed allows you to configure the feeder in different ways, from a manual feed mode so you can scan pages one by one, to a mode where you only have to place paper in the feeder to begin scanning.

Check the *Enable* box and choose a *Manual Feed* mode:

- All Pages—when documents are placed in the feed tray, scanning starts automatically. When scanning is finished, the scanner waits for more documents. Scanning starts again after you place more documents in the feed tray.
- All Pages and Wait till user pushes key—place documents in the feed tray and press the scanner's Stop/Start button to start scanning. When scanning is finished, the scanner waits for more documents. Scanning starts again after you place more documents in the feed tray and press the scanner's Stop/Start button.
- 1 Page—you can insert documents one by one. Insertion of a document starts scanning.

Manual Timeout—when you enable *Manual Feed*, *Manual Timeout* is also enabled. You can specify a time delay setting from 1–300 seconds. The default is 300 seconds (5 minutes). If a document is not fed manually within the specified time, the scanner returns to automatic feeding mode.

Document Printer
(Imprinter)

The **Imprinter** button in the Scanner Special Features dialog box allows you to access the Imprinter Parameters dialog box in which you can set up parameters for the optional document printer. The document printer can print character strings on a document.

There are two printing methods:

- Pre—prints on the front of the document before scanning. The printing becomes part of the scanned image. (Available for the Scanner 1500 and the Scanner 2500.)
- Post—prints on the back of the document after scanning. The printing does not become part of the scanned image. (Available only for the Scanner 2500.)

Printable Characters

The chart below shows the characters that the document printer can print on the scanned document.

SP	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[]	^	_
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
q	r	s	t	u	v	w	x	y	z	{		}	~		

**Printing a Counter, Date,
Time, or Fixed String**

Use the following strings to print any combination of a counter, a date, a time, or a fixed string.

Counter

#:9999999

The first pound character (#) encountered in the string is replaced with the value specified in the **Counter** dialog box. A double pound character (##) is printed as #.

Extra spaces are padded with zeroes (0) when %0# is specified.

Date

String	Example
%1d: YY/MM/DD	97/02/20
%2d: YYYY/MM/DD	1997/02/20
%3d: MM/DD/YY	12/13/97
%4d: DD/ABBREVIATED MONTH/YY	13/Dec/97

NOTE: YY or YYYY: year, MM: month, DD: day

Time

String	Example
%1t: HH:MM	11:27
%2t: HH:MM:SS	10:46:34

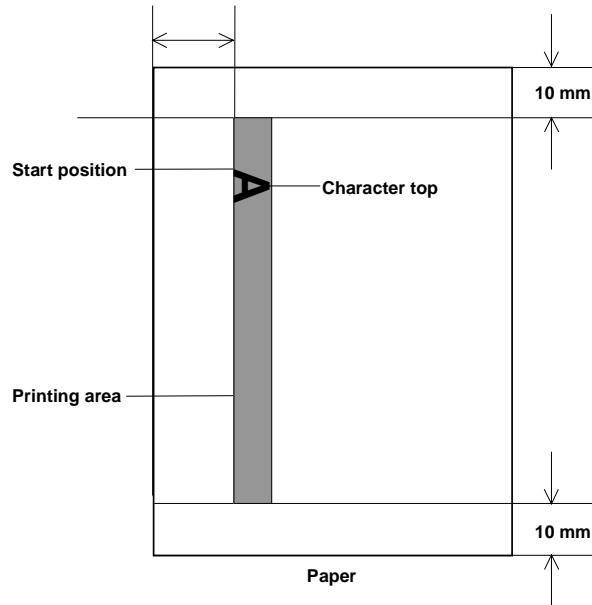
NOTE: HH: hour, MM: minutes, SS: seconds

Fixed String

Almost any text string can be a fixed string that can be printed on a scanned document. Up to 72 characters can be printed. This includes any variable information, such as a counter, date, or time. Only the characters shown in the chart on the previous page may be used in a fixed string.

Printing Start Position

Printing is done vertically from the top of the paper. The character top ("A" in the diagram below) points to the right edge of the document.

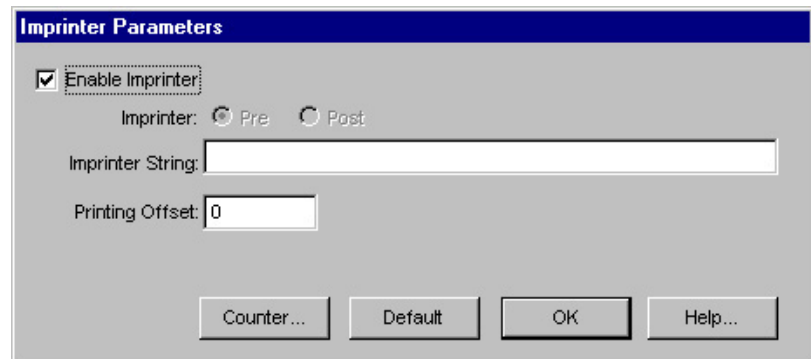


The printing start position is specified in the **Printing Offset** text box in the Imprinter Parameters dialog box.

The horizontal printing position (the distance from the right or left margin) is set mechanically on the document printer in the scanner.

Setting up for Document Printing

1. Click on the *More* button to access the More dialog box.
2. Click on the *Imprinter* button to access the Imprinter Parameters dialog box.
3. Check the *Enable Imprinter* box.

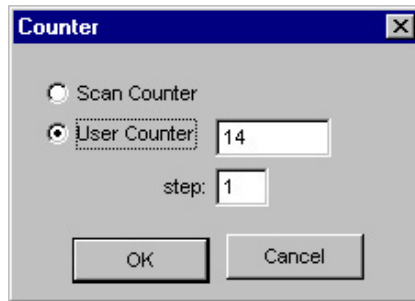


The image shows a dialog box titled "Imprinter Parameters" with a blue header bar. Inside the dialog, there is a checked checkbox labeled "Enable Imprinter". Below this, there are two radio buttons labeled "Pre" and "Post", with "Pre" selected. There is a text input field labeled "Imprinter String:" and a numeric input field labeled "Printing Offset:" with the value "0". At the bottom of the dialog, there are four buttons: "Counter...", "Default", "OK", and "Help...".

4. Type the character sequence in the *Imprinter String* text box. A time and date can also be specified.
5. Type the printing start position in the *Printing Offset* text box.

Counter

Click on the **Counter** button in the Imprinter Parameters dialog box to access the Counter dialog box to view the current scan count or to set up the counter.



Scan Counter—when this button is selected, the number of sheets scanned appears only on the scanner's LCD display.

User Counter—when this button is selected, the number of sheets scanned appears only in the *User Counter* box. The value in this box is the number of sheets scanned multiplied by the step value that appears in the *step* box. Allowable step values are 1 through 9.

For example, when you enter a step value of "1," the value in the *User Counter* box increments in multiples of one (i.e., 1, 2, 3, . . .) for each sheet that is scanned.

Enter a step value of "2" to increment the *User Counter* value in multiples of two (i.e., 2, 4, 6, . . .) for each sheet that is scanned.

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Rochester, New York 14650

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A-63055 12/99
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